Settled Dust / Gravity Sampling Protocol

Purpose:

The purpose of settled dust or gravity sampling is to assess trends in beryllium migration from one location to another and to determine the rate of beryllium particle accumulation across a continuous time line. It is used to assess the effectiveness of beryllium migration control changes.

Equipment:

- Designated Shelf
- Single Use 100mm Petri dishes
- Whatman 41 filters
- Silicone spray
- Double sided tape or tube silicone
- NOTICE Sign
- Tweezers
- Gloves
- Cellophane bags
- Ziplock bags
- Gravity/Settled Dust sample field data collection sheets

Procedure:

1) Locate or fabricate a shelf, large enough to hold 4 petri dishes.
2) The shelf should be high enough off the floor to reduce the chance of tampering. (8 to 10 feet)
3) Post a NOTICE sign
4) Place one or four petri dishes (large enough to hold Whatman 41 filters) on shelf. The decision to use one petri dish or four, is dependent on the expected level of Be deposition. If the Be accumulation within one quarter is expected to be below the limit of detection the 4 petri dish method is recommended.

NOTICE
These are Special Control Samples

PLEASE DO NOT DISTURB OR TOUCH
VIOLATORS ARE SUBJECT TO DISCIPLINARY ACTION

CONTACT EH&S IF ANY UNUSUAL MAINTENANCE OR SERVICE ACTIVITIES ARE SCHEDULED TO OCCUR IN THIS AREA

5) The lids for the petri dish/s should be kept in a ziplock bag and saved until the end of the sample period.
6) Ideally, sampling should begin at the beginning of the year or quarter (Jan, Apr, Jul, Oct).
7) Spray a generous amount of silicone on the Whatman 41 filter/s
8) To keep filter/s from blowing out of the petri dish, apply a very small strip of double-sided tape or a small amount of silicone adhesive to the bottom center of each filter.
9) Place one filter in the center of each petri dish. Record the start date of the sample/s on an appropriate sample sheet.
10) At the end of each quarter:

a) Donn a pair of disposable gloves
b) Spray a clean Whatman 41 filter with silicone spray.
c) Using tweezers place the clean, silicone sprayed Whatman on top of the quarterly Whatman filter in the petri dish (creating a beryllium gravity sample sandwich with silicone). This is done to prevent particle loss during transportation.
d) Cover the petri dish with lid, tape lids to secure, and mark the sample number on lid.
e) Place petri dish in a ziplock bag.
f) Record stop date on the sample sheet.
g) The surface area of the Whatman 41 is 0.092ft^2.
h) Calculate the number of days the filter was exposed and record on the sample sheet.
i) Complete the sample data sheet (including comments) and submit to the Elmore laboratory for analysis.

11) The laboratory will report the total µg of beryllium deposited on filter; this divided by the ft^2 will give you a µg/ ft^2; this divided by the number of days exposed will yield a µg Be/ft^2/day accumulation rate.

IMPROTANT NOTE:

- Be sure to make note of any special work (e.g. overhead cleaning) that occurred in the area during the sample period. Unusual maintenance or service activities may warrant taking the samples down or covering them during periods of special work.
- The objective of the method is to determine the level of migration during normal conditions. If the gravity samples were "spiked" during unusual maintenance or service activities, it would provide an unrealistic view of normal migration levels, since a thorough cleanup of the area should follow any of these activities which would reduce or eliminate surface contamination levels on everything except the gravity sample filters. It would make the interpretation of the result difficult when the proper service and maintenance protocol was followed.

Example:

4-Petri Dish Method

Quarter	**µg Be**	**ft^2**	**Days**	**µg Be/ft^2/day**
1st	ND	0.092	90	ND
2nd	0.2	0.092	180	0.012
3rd	0.29	0.092	270	0.011
4th	0.31	0.092	360	0.010

1-Petri Dish Method

Quarter	**µg Be**	**ft^2**	**Days**	**µg Be/ft^2/day**
1st	1.6	0.092	90	0.19
2nd	2.8	0.092	90	0.33
3rd	5.1	0.092	90	0.62
4th	2.2	0.092	90	0.27

CUSTOMER SERVICE - GRAVITY/SETTLED DUST SAMPLES (GS)

Company's Name:____ Contact Person's Name:____

Address:____ Phone #:____

Collected By:_________________________________ Clock #:____________ Submission Date:_____________ Charged Cost Center#____________________________

Sample #	Start Date	Stop Date	Location	Number of Days Exposed	Area of Filter (Ft.^{2})	Total (μg) Be	**Result** μg Be/Ft^2/Day
					0.092		
Comments:							

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Comments:							

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